

4.4 Air Quality

An Air Quality Impact Analysis was prepared by Giroux and Associates Environmental Consultants for the proposed 111. Callexico Place project (September 2, 2008). This report describes existing air quality conditions in the project area and assesses potential impacts as a result of implementation of the proposed project. The complete report is provided in Technical Appendices - Volume II of II, Appendix C1, of this EIR.

4.4.1 Existing Conditions

This section addresses climate and ambient air quality. The discussion of ambient air quality includes a description of national and state ambient air quality standards, baseline air quality, pollution sources, and air quality management planning.

4.4.1.1 *Regional and Local Climate*

The project site is located within the Salton Sea Air Basin (SSAB). The SSAB, which contains part of Riverside County and all of Imperial County, is governed largely by the large-scale sinking and warming of air within the semi-permanent subtropical high-pressure center over the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms, except in winter when the high is weakest and farthest south. When the fringes of mid-latitude storms do pass through the Imperial Valley in winter, the coastal mountains create a strong "rainshadow" effect that makes Imperial Valley second only to Death Valley as the driest location within the United States. The flat terrain near the Salton Sea, intense solar heating by day and strong radiational cooling at night create deep convective thermals during the daytime, but equally strong surface-based temperature inversions at night. The inversions and light nocturnal winds trap any local air pollution emissions near the ground with frequently hazy conditions at sunrise, followed by rapid daytime dissipation as winds pick up and convective activity begins.

The lack of clouds and atmospheric moisture creates strong diurnal and seasonal temperature oscillations ranging from average summer maxima of 108° F down to winter morning minima of 38° F. The most pleasant weather occurs from about mid-October to early May when daily highs are in the 70s and 80s with very infrequent cloudiness or rainfall. Imperial County experiences significant (>0.10" in 24 hours) rainfall an average of only four times per year. The local area usually has three days of rain in winter and one thunderstorm day in August, when moisture from the Gulf of California or even the Gulf of Mexico enters the Imperial Valley from the southeast across Mexico and Arizona. The annual rainfall in this arid region is less than three inches per year.

Winds in the project area are driven by a complex pattern of local, regional and global forces, but primarily reflect the temperature difference between the cool ocean to the west and the heated interior of the entire desert southwest. Area wind measurements indicate that there are two major wind regimes that dominate airflow distributions. For much of the year, winds flow predominantly from the west to the east. In summer, intense solar heating in the Imperial Valley creates a more localized wind pattern, as air comes up from the southeast via the Gulf of California. During periods of strong solar heating and intense convection, turbulent motion creates good mixing and low levels of air pollution. However, even strong turbulent mixing is insufficient to overcome the limited air pollution controls on sources in the Mexicali (Mexico) area. The

Calexico area thus experiences unhealthful air quality from photochemical smog and from dust due to extensive surface disturbance and the very arid climate.

4.4.1.2 Major Air Pollutants

Air quality is determined by comparing the ambient air concentration of specific pollutants to the "standards" set by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Control Board (CARB). The "standards" were established under the Federal and State Clean Air Acts, to protect the public's health and welfare. The EPA established the National Ambient Air Quality Standards (NAAQS) for six principal air pollutants (also called criteria pollutants): ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). Criteria pollutants are the most common air pollutants and are widely distributed across the country. In addition to the criteria pollutants, the California Ambient Air Quality Standards (CAAQS) establish standards for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and volatile organic compounds (e.g., vinyl chloride, etc.). Descriptions and sources of the criteria pollutants is identified below:

- Ozone (O_3): O_3 exists in the upper atmosphere ozone layer as well as at the earth's surface and is a product of the photochemical process involving the sun's energy. Ozone is formed in the atmosphere by the reaction of VOCs and NO_x in the presence of sunlight, which is most abundant in the summer. Changing weather patterns contribute to yearly differences in ozone concentrations. Ozone is a major component of smog. VOCs are often targeted in efforts to control smog.
- Particulate Matter (PM): PM is a major air pollutant consisting of tiny solid or liquid particles of soot, dust, dirt, smoke, fumes, and aerosols. In general, PM consists of a mixture of larger materials ("coarse particles") and smaller particles ("fine particles"). The EPA monitors and regulates $PM_{2.5}$ and PM_{10} . $PM_{2.5}$ refers to "fine particles" and includes particles with diameters equal to or smaller than 2.5 micrometers (μm) in diameter. PM_{10} refers to particles less than or equal to 10 μm (about 0.0004 inches or less) in diameter and includes "coarse particles" that are inhalable.

PM is emitted directly from a source (i.e., emitted from vehicles, forest fires, unpaved roads, construction sites, etc.) or formed in complicated chemical reactions from gases in the atmosphere (i.e., sulfates, nitrates, carbon). PM pollution varies by location and time of year and is influenced by weather factors such as temperature, humidity, and wind. PM causes adverse health effects and visibility reduction.

- Carbon Monoxide (CO): CO is a colorless, odorless, tasteless and toxic gas resulting from the incomplete combustion of fossil fuels. CO is a component of motor vehicle exhaust and as such, high concentrations of CO generally occur in areas with heavy traffic congestion. Other sources of CO emissions include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires.
- Nitrogen Dioxides (NO_2): NO_2 is a reddish brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide (NO). Nitrogen oxides (NO_x), the generic term for a group of highly reactive gases that contain nitrogen and oxygen in varying amounts, play a major role in the formation of ozone, particulate matter, haze, and acid rain. Nitrogen oxides are typically created during combustion processes such as those that occur in automobiles and power plants.

Home heaters and gas stoves can also produce substantial amounts of NO₂ in indoor settings. Natural sources include lightning and biological processes in soil.

- **Sulfur Dioxide (SO₂):** SO₂, as well as other gases belonging to the sulfur oxide (SO_x) family, is a strong smelling, colorless gas that is formed when fuel containing sulfur (mainly coal and oil) is burned at power plants and during metal smelting and other industrial processes. Sulfur dioxide (SO₂) and other sulfur oxides contribute to the problem of acid deposition. Fuel combustion, largely from electricity generation, accounts for most of the total SO₂ emissions.
- **Lead (Pb):** Automotive sources were historically the major contributor of lead emissions. Currently, as a result of a reduction in the amount of lead in gasoline, lead emissions from the transportation sector has greatly declined over the past few decades. Today, industrial processes, primarily metals processing, are the major source of lead emissions to the atmosphere. The highest air concentrations of lead are usually found in the vicinity of smelters and battery manufacturers.
- **Visibility Reducing Particles (VPR):** VPRs are small particles that occlude visibility and/or increase glare or haziness. Since sulfate emissions (notably SO₂) have been found to be a significant contributor to visibility-reducing particles. Congress mandated reductions in annual emissions of SO₂ from fossil fuels starting in 1995.
- **Sulfates:** An inorganic ion that is generally naturally occurring and is one of several classifications of minerals containing positive sulfur ions bonded to negative oxygen ions.
- **Hydrogen Sulfide (H₂S):** A colorless, flammable, poisonous compound having a characteristic rotten egg odor. It often results when bacteria breaks down organic matter in the absence of oxygen. High concentrations of 500-800 ppm can be fatal and lower levels can cause eye irritation and respiratory effects.
- **Volatile Organic Compounds (VOCs):** Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.
- **Reactive Organic Gases (ROGs):** Closely related to VOCs, ROGs are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion or decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. For the purpose of assessment, VOC and ROG are often used interchangeably since the net effect is the creation of smog.

Table 4.4-1 provides a summary of the most relevant health effects caused by the criteria air pollutants.

TABLE 4.4-1
Health Effects of Major Criteria Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	<ul style="list-style-type: none"> • Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter. 	<ul style="list-style-type: none"> • Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO ₂)	<ul style="list-style-type: none"> • Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions. 	<ul style="list-style-type: none"> • Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O ₃)	<ul style="list-style-type: none"> • Atmospheric reaction of organic gases with nitrogen oxides in sunlight. 	<ul style="list-style-type: none"> • Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	<ul style="list-style-type: none"> • Contaminated soil. 	<ul style="list-style-type: none"> • Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Fine Particulate Matter (PM ₁₀)	<ul style="list-style-type: none"> • Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions. 	<ul style="list-style-type: none"> • Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter (PM _{2.5})	<ul style="list-style-type: none"> • Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NO_x, sulfur oxides, and organics. 	<ul style="list-style-type: none"> • Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO ₂)	<ul style="list-style-type: none"> • Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes. 	<ul style="list-style-type: none"> • Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: Giroux and Associates, 2008.

4.4.1.3 Ambient Air Quality

A. National and State Standards

The EPA (under the Federal Clean Air Act of 1970, and amended in 1977) established ambient air quality standards for specific pollutants. These standards are called the National Ambient Air Quality Standards (NAAQS). Individual states have the option to add additional pollutants, require more stringent compliance, or include different exposure periods, then adopt changes as their own state standards. The CARB subsequently established the more stringent CAAQS for the criteria pollutants. Table 4.4-2 compares the California and federal ambient air quality standards. Areas where ambient air concentrations of pollutants exceed the state and federal standards are considered to be in "non-attainment" status for that pollutant. The CARB, in conjunction with local air pollution control districts, monitors ambient air quality at approximately 250 air-monitoring stations across the state.

The entries in Table 4.4-2 include the federal standards for chronic (8-hour) ozone exposure or for ultra-small diameter particulate matter of 2.5 microns or less in diameter (called "PM_{2.5}"), adopted in 1997. The Environmental Protection Agency's (EPA) authority to adopt such standards was subsequently challenged. In a unanimous decision, the U.S. Supreme Court ruled the EPA did have authority to promulgate standards without specific congressional authority, and that a cost-benefit analysis was not required for health-based standards. The Court also ruled, however, that there was an attainment schedule inconsistency between "old" and "new" standards. This inconsistency was resolved through a consent decree signed by the EPA in 2002. EPA has designated Imperial County as a "transitional" non-attainment area for the 8-hour ozone standard. "Transitional areas" are anticipated to meet the federal 8-hour standard in the near future, or already meet the standard, but do not have a sufficiently long data record to justify an "attainment" designation.

Analysis of the most current data on the health effects of inhalation of fine particulate matter prompted the CARB to recommend adoption of the statewide PM_{2.5} standard that is more stringent than the federal standard. This standard was adopted on June 20, 2002. The State PM_{2.5} standard is more of a goal in that it does not have any specific attainment planning requirements like a federal clean air standard. The state standard became enforceable in 2003 when it was incorporated into the California Health and Safety Code. Although the Imperial Valley experiences high dust levels due to very dry soils, only a small fraction of earthen material is in the PM_{2.5} size range. PM_{2.5} levels are therefore not as frequently or severely above standards as are PM₁₀ concentrations. Although the future designation has not been settled and a non-attainment status has been proposed by the EPA.

Because of the strong evidence that chronic ozone exposure is more harmful than short-term hourly levels, the CARB has adopted a new ozone standard. The new standard mirrors the federal longer-term (8 hour) exposure limit. The California 8-hour ozone standard is slightly more stringent than the federal standard. It does not have a specific attainment deadline, but CARB requires that continued progress toward attainment must be demonstrated.

TABLE 4.4-2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (140 µg/m³)		0.08 ppm (157 µg/m³)		
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		Revoked (2006)		
Fine Particulate Matter (PM _{2.5})	24 Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	15 µg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		-	-	-
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.030 ppm (56 µg/m³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (338 µg/m³)		-		
Lead	30-Day average	1.5 µg/m³	Atomic Absorption	-	-	-
	Calendar Quarter	-		1.5 µg/m³	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	-	Ultraviolet Fluorescence	0.030 ppm (80 µg/m³)	-	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	-	
	3 Hour	-		-	0.5 ppm (1,300 µg/m³)	
	1 Hour	0.25 ppm (655 µg/m³)		-	-	

TABLE 4.4-2
Ambient Air Quality Standards (cont'd.)

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

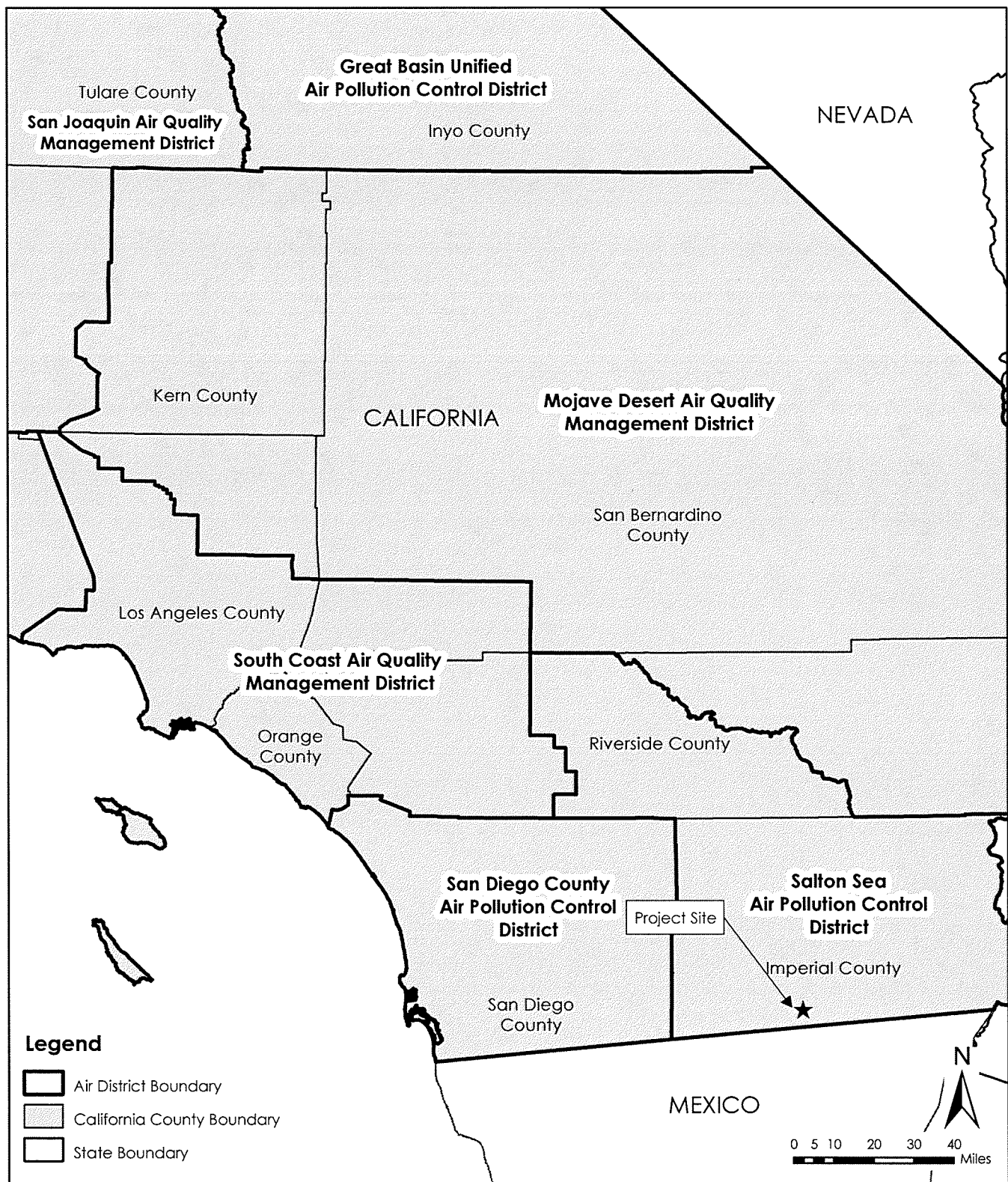
Source: Giroux and Associates, 2008.

As part of EPA's 2002 consent decree on clean air standards, a further review of airborne particulate matter (PM) and human health was initiated. A substantial modification of federal clean air standards for PM was promulgated in 2006. Standards for PM_{2.5} were strengthened, a new class of PM in the 2.5 to 10 micron size was created, some PM₁₀ standards were revoked, and a distinction between rural and urban air quality was adopted.

B. Existing Ambient Air Quality

The SSAB is under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD) (Figure 4.4-1). Existing levels of ambient air quality and historical trends and projections in the project area are best documented from measurements made by the ICAPCD. The CARB and ICAPCD monitor ambient air quality at seven air-monitoring stations in Imperial County. The closest air monitoring station to the project site with the most complete data record is located in Calexico at the "Ethel Street" monitor. From this data resource, one can readily infer that baseline air quality levels near the project site are occasionally unhealthy, but there are some encouraging signs that the air is slowly, but surely, getting better. Attainment may still be years away, but the frequency and magnitude of air pollution episodes, especially those considered unhealthy for all people, has dropped considerably in the last decade.

Table 4.4-3 summarizes the last five years of published monitoring data from the Ethel Street air monitoring station. PM₁₀ levels around Calexico exceed the state standard on a large number of days. Several of the PM₁₀ episodes exceed the federal standard. It had been argued by the EPA that most violations of federal PM₁₀ standards occur due to cross-border dust transport or during high wind episodes, and



SOURCE: SanGIS, 2008; BRG Consulting, Inc., 2008

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Air Pollution Control District Boundaries

FIGURE
4.4-1

TABLE 4.4-3
Air Quality Monitoring Summary
 (Days Standards Were Exceeded and Maximum Observed Concentrations)

Pollutant/Standard	2001	2002	2003	2004	2005	2006
Ozone						
1-Hour > 0.09 ppm (S)	28	4	2	4	6	2
8- Hour > 0.07 ppm (S)	32	4	2	5	15	3
8- Hour > 0.08 ppm (F)	11	1	0	0	1	1
Max 1-Hour Conc. (ppm)	0.167	0.116	0.107	0.108	0.116	0.111
Carbon Monoxide						
1-Hour > 20. ppm (S)	0	0	0	0	0	0
8- Hour > 9. ppm (S, F)	6	4	0	1	0	1
Max 1-Hour Conc. (ppm)	17.4	15.6	11.8	12.5	12.4	12.4
Max 8-Hour Conc. (ppm)	12.3	11.6	8.8	10.3	9.0	9.8
Nitrogen Dioxide						
1-Hour > 0.18 ppm (S)	0	0	0	0	0	0
Max 1-Hour Conc. (ppm)	0.14	0.14	0.15	0.11	0.13	0.10
Respirable Particulates (PM₁₀)						
24-Hour > 50 µg/m ³ (S)	53/62	51/61	46/59	36/60	27/61	24/60
24-Hour > 150 µg/m ³ (F)	3/62	3/61	4/59	1/60	1/61	1/60
Max. 24-Hr. Conc. (µg/m ³)	437.	373.	238.	161.	188.	164.
Ultra-Fine Particulates (PM_{2.5})						
24-Hr. > 35 µg/m ³ (F)	4/101	6/115	4/105	1/104	2/96	5/110
Max. 24-Hr. Conc. (µg/m ³)	60.2	46.5	65.1	48.5	67.6	68.8

Note: (S) = State ambient standard; (F) = Federal ambient standard

Source: Giroux and Associates, 2008.

therefore Imperial County should not be considered a non-attainment area for the PM₁₀ standard. This conclusion was not upheld by federal courts, which agreed that the non-attainment designation and any associated planning requirements should remain in place.

Summer ozone levels also routinely exceed standards, particularly the more stringent State one-hour standard. However, since 2002, there has been a dramatic improvement in ozone air quality. Since 2002, there has been an average of only three days above the state ozone standard, and there have been no violations of the federal one-hour, and only one violation of the federal eight-hour standard in three years. Any air-shed that does not exceed federal standards more than three times in three years is considered to be in attainment. The Calexico area, while not yet formally designated as such, has met all attainment designation requirements for the federal ozone standard as with the rest of the Imperial County, has a moderate non-attainment designation for the federal ozone standard. As a result, both under the State and Federal Standards, the APCD is currently in the process of developing both an ozone and PM₁₀ State Implementation Plan (SIP) for submittal to the EPA by December 2008.

Due to a combination of south to north winds, less stringent pollution controls, and strong winter temperature inversions, Calexico is one of the last areas of California where the eight-hour carbon monoxide (CO) standard is sometimes exceeded. The federal 8-hour CO standard was exceeded once in 2003-05 (no more than three violations is required for attainment). Transport from Mexicali is still a concern, but the Calexico area may soon be in attainment for the CO standard based upon the most recent data history.

Air basins where ambient air quality standards are exceeded are called "non-attainment" areas. If standards are met, they are designated as "attainment" areas. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." Federal "non-attainment" areas are considered extreme, serious or moderate as a function of deviation from standards. The current attainment designations for the project area are described in Table 4.4-4.

TABLE 4.4-4
Attainment Status of Criteria Pollutants in the County of Imperial

Pollutant	Exposure	State	Federal
Ozone	1-Hour	Moderate Non-Attainment	No Standard
	8-Hour	Unclassified*	Transitional Moderate Non-Attainment**
CO	8-Hour	Non-Attainment	Attainment/Unclassified
NO ₂	1-Hour or Annual	Attainment	Attainment/Unclassified
PM ₁₀	Annual	Non-Attainment	Serious Non-Attainment
PM _{2.5}	N/A	Unclassified	Unclassified
All Other	N/A	Attainment or Unclassified	Attainment or Unclassified

Note: * = anticipated to be designated as non-attainment when designations are issued; ** = has met attainment criteria for 2003-05.
Source: Giroux and Associates, 2008.

Under the California standard, Imperial County is seen to be a moderate non-attainment area for ozone and non-attainment for PM₁₀. Under the federal standard, Imperial County is in serious non-attainment for PM₁₀ and "transitional" non-attainment for 8-hour ozone.

All areas designated as non-attainment under the Clean Air Act Amendment (CAAA) are required to prepare plans showing how the area would meet air quality standards by specified attainment dates. The Air Quality Attainment Plan (AQAP) is the region's plan for improving air quality. Imperial County adopted the 1991 AQAP for Ozone and the 1993 State Implementation Plan (SIP) for PM₁₀.

The ozone attainment plan has not been updated since 1991 because Imperial County has a problem in that an overwhelming significant portion of its pollution is from upwinds sources. An update will not be available until the significance of these upwind sources has been quantified by the ICAPCD.

The applicable PM₁₀ air quality plan is the SIP developed in 1993. At the time of the 1993 SIP PM₁₀ adoption, insufficient data were available for demonstrating attainment. However, the PM₁₀ plan includes a range of measures intended to achieve attainment of the national PM₁₀ standards in the Imperial Valley Planning Area. ICAPCD has applied for special status as "attainment but for emissions emanating outside the U.S.". Imperial County has determined that heavy influence of emissions is coming from northwestern Mexico, especially Mexicali. In October of 2003, after a lawsuit with the Sierra Club concerning international trans-border emissions, the U.S. Court of Appeals ordered EPA to reclassify the Imperial Valley as "serious" for PM₁₀. This ruling required the ICAPCD to enact more stringent pollution control requirements for particulate pollution sources. Therefore, rule 800 was strengthened to require more stringent PM₁₀ dust control for a variety of emissions sources. Updates to the 1993 PM₁₀ SIP are pending.

4.4.1.4 Odors/Air Toxins

A. Geothermal Power Plant Air Toxins

The Heber Geothermal Company (HGC) Power Plant facility is located approximately 0.50 mile northwest and upwind of the project site. THE HGC plant emits small amounts of gaseous pollutants that may be unhealthful and/or cause a nuisance. Such emissions are within the operator's permitted authority to emit. However, such emissions are regulated and monitored at both the Federal and State level, including the ICAPCD.

A risk assessment was conducted in 1994 by the ICAPCD in accordance with guidelines provided by the California Air Pollution Control Officers Association (CAPCOA). The CAPCOA risk assessment required that the community health hazard be represented by a Maximum Exposed Individual (MEI). An MEI is defined as a resident continuously exposed (24 hours per day for 7 days a week) for a 70-year lifetime at an offsite residence maximally impacted by facility emissions. Therefore, in order to be impacted by the HGC Plant emissions at the level reported in the risk assessment, a person will needed to have continuous exposure to the plant's emissions for 24 hours a day for 7 days a week (total 168 hours per week) for a 70-year lifetime. The 1994 risk assessment concluded that the cancer risk associated with facility emissions would be below the threshold of 10 in one million and the acute risk would be below the threshold of 1 in one million (see Appendix C-1, p.23 of Technical Appendices Volume II of II of this EIR).

Regulatory agencies examining the geothermal power plant facility found no detectable levels of arsenic compounds, beryllium, bromide compounds, cadmium compounds, hexavalent chromium, copper, lead compounds, mercury, nickel, radon, or selenium compounds in the return circulating water. The HGC facility emits small amounts of gaseous pollutants (hydrogen sulfide (H₂S), ammonia (NH₃), and benzene (C₆H₆)), which may be unhealthful and/or cause a nuisance. Off-site exposures of hydrogen sulfide and ammonia near the HGC plant on Pitzer Road are primarily at levels that are perceived as odor nuisances which diminish with increasing distance from the source. Benzene is a known carcinogen. Ammonia

derives mainly from the condensate flow line and is characterized by a pungent odor typical of experiences around fertilizer tanks or cattle urine. The reported daily release rate in November 1999 was 842 pounds per day. Under normally good atmospheric dispersion conditions in Imperial County, detectable ammonia odor is confined to the immediate power plant vicinity.

Hydrogen sulfide (H_2S) is mainly a component of the non-condensable gases (NCG) released by the facility. Carbon dioxide (CO_2) is the main NCG released. It is detectable at extremely low concentrations. H_2S is the pollutant emitted from numerous geothermal power plants that causes the greatest odor conflict with neighboring sensitive uses. HGC reports that ambient air quality standards for H_2S are not exceeded, but that people can detect H_2S at levels well below the ambient standard. This results because the standard is an hourly average, but a short "whiff" at levels well above the average can create annoyance even if the one-hour average is within acceptable limits.

The ICAPCD has not issued any equipment notices of violation to the plant, and it has not been cited for any nuisance violations. This suggests that the plant operates within allowed parameters. The lack of any nuisance complaints, however, could also be due to a lack of any substantial existing development downwind of the plant. The implementation of the proposed project could change this situation. The potential impacts associated with the proposed project are discussed below.

There are no residential uses planned for the project site where a sensitive receptor would be exposed for 24-hours per day/ 7-days per week for 70-years. Only short-term hotel occupancies are anticipated. Additional exposed receptors could be the on-site office employees or site staff, estimated to be exposed for no more than 40 hours per week for a time span of much less than 70 years. The risk assessment analysis assumed exposure for 168 hours per week, or 420 percent in excess of the assumed proposed project employment. Nevertheless, health impacts from the HGC plant are evaluated below for the proposed project.

In the latest project emissions inventory, H_2S emissions were reported at 96 pounds per day. A screening level of dispersion analysis using SCREEN3 computer model was performed in 2001 on this emission level with a predicted one-hour average H_2S level of 20 parts-per-billion (ppb) at the project boundary closest to HGC. The California one-hour standard is 30 ppb. Because short-term H_2S levels could exceed the average by as much as a factor of ten, clearly perceptible H_2S odor could be experienced by on-site sensitive receptors. However, the combined effects of enhanced controls and increased turbulent dispersion with distance will substantially reduce possible occasional plant odor detectability at outdoor project uses.

Benzene is a powerful carcinogen. Benzene and diesel exhaust particulates are the two principal sources of cancer risk from breathing the air in California urban environments. Because of the normally good atmospheric dispersion and low development density/traffic in Imperial County, airborne cancer risk is low except in the immediate vicinity of the border and adjacent to Mexicali. In 2002, the HGC plant emitted 65 pounds of benzene per day. Benzene is an air toxin and therefore no air threshold exists for this air toxin. Benzene and other carcinogens were considered in the 1994 health risk assessment prepared for the HGC facility.

The potential health risks associated with the facility's benzene emissions were considered in the 1994 risk assessment and are discussed in the impact analysis in Section 4.4.3.4.A. of this EIR.

B. Global Climate Change/Greenhouse Gas Emissions

Regulation

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." These greenhouse gases contribute to an increase in the temperature of the earth's atmosphere by transparency to a short wavelength of visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. The Governor's Office of Planning and Research is in the process of developing CEQA significance thresholds for GHG emissions but thresholds have yet to be established. GHG statutes and executive orders (EO) include Assembly Bill (AB) 32, Senate Bill (SB) 1368, EO S-03-05, EO S-20-06, and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging targets GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources. Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25 to 40 percent, from business as usual, over the next 13 years (by 2020).
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Additionally, through the California Climate Air Registry (CCAR), general and industry-specific protocols for assessing and reporting GHG emissions have been developed. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion

emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

Neither Appendix G of the CEQA Guidelines, nor any other CEQA regulation specifically require an EIR to address a project's impact on GHG. However, Senate Bill 97 requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines concerning GHG impacts by January 1, 2010. Prior to the promulgation of formal guidelines, OPR has issued a technical advisory on addressing climate change through CEQA.

The interim policy recommended by OPR for addressing climate change through CEQA includes the following:

- Identify/quantify GHG emissions;
- Establish a threshold of significance; and,
- Mitigate impacts if a finding of a significant impact is made.

Because of the global nature of the GHG issue, an individual development project such as the proposed project would not have a significant impact on global climate change on a project level. It is also difficult to determine if the impact of any project should be considered cumulatively significant. The typical course of action in most recent CEQA documents for substantial projects is to make a finding of cumulative significance. They conclude that all reasonably available control measures should thus be adopted and implemented at the project level (Giroux & Associates, 2008).

Please refer to the Air Quality Impact Analysis (Technical Appendices - Volume II of II, Appendix C1, of this EIR) for a detailed discussion on regulation of GHG emissions.

Global Warming Potential

As discussed in much greater detail in the Air Quality Impact Analysis (Technical Appendices - Volume II of II, Appendix C1), global warming and global climate change have health effects that may arise with the increase temperature. A discussion of the health effects of each GHG emission pollutant is also provided in the Air Quality Impact Analysis.

C. Adjacent Agricultural Use

The project site is bordered on the north by agricultural fields which have the potential to cause noise, dust, light, fumes, chemical usage, insects and odors that may affect uses that are adjacent to these agricultural fields.

4.4.1.5 Sensitive Receptors

High concentrations of air pollutants pose health hazards for the general population, but particularly for the young, the elderly, and the sick. Typical health problems attributed to smog include respiratory ailments, eye and throat irritations, headaches, coughing, and chest discomfort. Certain land uses are considered to be more sensitive to the effects of air pollution. Schools, hospitals, residences, and other facilities where

people congregate, especially children, the elderly and infirm, are considered particularly sensitive to air pollutants. Currently, no sensitive receptors are located within the project site. The closest residential unit to the project site the Scaroni Ranch property located approximately 0.50 mile north of the project site.

4.4.1.6 Air Quality Plans

A. Federal and State Regulations

Federal Clean Air Act

As briefly discussed above, the federal Clean Air Act requires areas with unhealthy levels of criteria pollutants to develop plans, known as State Implementation Plans (SIPs), describing how and when they will attain the NAAQS. SIPs are not single documents; rather they are a compilation of state and local regulations (i.e., new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls) that a state uses to achieve healthy air quality under the Federal Clean Air Act (CARB, 2007c). State and local agencies must involve the public in the adoption process before SIP elements are submitted to the EPA for approval or disapproval, and the EPA must provide an opportunity for public comment before taking action on each SIP submittal. If the SIP is not acceptable to the EPA, the EPA can take over enforcing the Clean Air Act in that state (U.S. EPA, 2006).

The 1990 amendments to the federal Clean Air Act set new deadlines for attainment based on the severity of the pollution problem and launched a comprehensive planning process for attaining the NAAQS. The promulgation of the new national 8-hour O₃ standard and the fine particulate matter (PM_{2.5}) standards in 1997 resulted in additional statewide air quality planning efforts. In response to new federal regulations, future SIPs will also address ways to improve visibility in national parks and wilderness areas.

Under the CAAQS, Imperial County is designated as a "moderate" non-attainment area for O₃ (8-hour) and a non-attainment area for PM₁₀. Under the NAAQS, Imperial County is designated as a "serious" non-attainment for PM₁₀ and "transitional" non-attainment area for O₃ (8-hour). All areas designated as non-attainment under the Clean Air Act are required to prepare plans showing how the area would meet air quality standards by specified attainment dates. The Air Quality Attainment Plan (AQAP) is the region's plan for improving air quality. Imperial County adopted an O₃ AQAP in 1991 and a PM₁₀ SIP in 1993. The O₃ attainment plan has not been updated since 1991 because Imperial County has a problem in that an overwhelming significant portion of its pollution is from upwind sources. An update will not be available until the significance of these upwind sources has been quantified by the ICAPCD.

At the time of the 1993 SIP PM₁₀ adoption insufficient data were available for demonstrating attainment. However, the PM₁₀ plan includes a range of measures intended to achieve attainment of the national PM₁₀ standards in the Imperial Valley Planning Area. The ICAPCD has applied for special status as "attainment but for emissions emanating outside the U.S." Imperial County has determined that heavy influence of emissions is coming from northwestern Mexico, especially Mexicali. In October 2003, after a lawsuit with the Sierra Club concerning international trans-border emissions, the U.S. Court of Appeals ordered the EPA to reclassify the Imperial Valley as "serious" for PM₁₀. This ruling required the ICAPCD to enact more stringent

pollution control requirements for particulate pollution sources. Rule 800 (General Requirements for Control of Fine Particulate Matter) was strengthened to require more stringent PM₁₀ dust control for a variety of emissions sources. Updates to the 1993 PM₁₀ SIP are pending.

The consistency of future projects with the SIP would be assessed through the land use and growth assumptions that are incorporated into the air quality planning document. If a proposed project is consistent with the applicable General Plan of the jurisdiction where it is located, then the project presumably has been anticipated within the regional air quality planning process. Such consistency would ensure that the project would not have an adverse regional air quality impact. If the relocation or change of vehicular emission patterns from a proposed project would not create any further unacceptable microscale impacts immediately adjacent to the proposed project area, then the project would have a less than significant air quality impact.

California Clean Air Act

The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. Air pollution from commercial and industrial facilities is regulated by the local air quality management districts, whereas mobile sources of air pollution are regulated by the CARB and EPA. All air pollution control districts have been formally designated as "attainment" or "non-attainment" for each state air quality standard. Areas in California where ambient air concentrations of pollutants are higher than the state standard are considered to be in "non-attainment" status for that pollutant. Non-attainment designations are categorized into three levels of severity: moderate, serious, and severe.

B. Local Regulations

Imperial County Air Pollution Control District

Imperial County Air Pollution Control District (ICAPCD) has regional authority over the control of air pollution from all sources other than emissions from motor vehicles. ICAPCD has regulatory control over many stationary sources of air contaminants, and is responsible for developing local air quality guidelines (CEQA Air Quality Handbook) and rules (ICAPCD Rules and Regulations). Significance criteria for stationary and mobile source air quality impacts are based upon the approach recommended by the CARB and ICAPCD. The ICAPCD establishes emission thresholds for determining the potential significance of operational emissions from a proposed project.

ICAPCD has not defined emission-level thresholds for construction-related emissions. Instead, ICAPCD has adopted, as part of their current November 2007 CEQA guidelines, standard and (for project sites greater than four acres) discretionary measures for construction emissions that must be followed. The type of measures to be implemented are dependent on the project (i.e., Tier I or Tier II), which is explained in more detail in Section 4.4.2.1. ~~regardless of total construction emissions.~~ These measures are designed to significantly reduce PM₁₀ emissions from construction activities.

The project will be required to comply with existing ICAPCD regulations and rules as they apply. Some of the rules and regulations that apply to this project are as follows:

Rule 424 – Architectural Coatings places restrictions on the volatile organic compounds (VOC) content of architectural coatings (i.e., paint, primer, etc.), including the sale and use of architectural coatings containing VOC. This rule will influence the architectural coatings selected for the proposed project.

Regulation VIII – Fugitive Dust Rules contains rules to reduce the amount of fugitive dust (PM₁₀) generated from anthropogenic (manmade) sources within Imperial County. The rules require actions to prevent, reduce, or mitigate the PM₁₀ emissions (Imperial County Air Pollution Control District, 2006). Applicable to the proposed project are the rules to reduce PM₁₀ emissions from construction and earthmoving activities. Best Available Control Measures to reduce fugitive dust during construction and earthmoving activities include but are not limited to:

- phasing of work in order to minimize disturbed surface area;
- application of water or chemical stabilizers to disturbed soils;
- construction and maintenance of wind barriers; and,
- use of a Track-Out control device or wash down system at access points to paved roads.

Compliance with Regulation VIII is mandatory on all construction sites, regardless of size. However, compliance with Regulation VIII does not constitute mitigation under the reductions attributed to environmental impacts.

Regional Comprehensive Plan and Guide

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties, and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG has prepared the Regional Comprehensive Plan and Guide (RCPG), which includes chapters on growth management and regional mobility that form the basis of the land use and transportation control portions of the Air Quality Management Plan (AQMP). These chapters are also utilized in the preparation of air quality forecasts.

4.4.2 Impact Thresholds

For purposes of this EIR, a significant air quality impact would occur if implementation of the proposed project would:

- *Conflict with or obstruct implementation of the applicable air quality plan;*
- *Violate any air quality standard or contribute substantially to an existing or projected air quality violation;*
- *Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);*

- Expose sensitive receptors to substantial pollutant concentrations; and/or,
- Create objectionable odors affecting a substantial number of people.

4.4.2.1 ICAPCD Thresholds of Significance

In addition to the above-mentioned CEQA thresholds, the ICAPCD has established specific air quality significance thresholds for construction activities and project operations. Many air quality impacts from dispersed mobile sources, i.e., the dominant pollution generators affecting the proposed project, often occur hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual source is generally immeasurably small. The ICAPCD has therefore developed suggested significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The ICAPCD CEQA Air Quality Handbook (2007) states that any projects in Imperial County with daily emissions that exceed any of the thresholds, as identified in Table 4.4-5, should be considered as having an individually and cumulatively significant air quality impact.

TABLE 4.4-5
Thresholds of Significance for Air Quality Impacts

Pollutant	Threshold (Pounds per Day)
ROG	55
NOx	55
CO	550
PM ₁₀	150
SOx	150
PM _{2.5}	55*

Note: * Assuming that ICAPCD elects to use the same threshold as the South Coast AQMD.

Source: Giroux and Associates, 2008.

Projects that do not exceed the above thresholds are considered Tier I projects. If the project-related emissions are below the above thresholds, and if standard mitigation measures are implemented as per the CEQA Handbook, then emissions impact may be considered less-than-significant. If these thresholds are exceeded, the project is considered a Tier II project, and impacts are considered significant.

For Tier I projects, construction activity impacts are considered to be mitigated to a less than significant level by implementation of effective and comprehensive mitigation measures found in Section 7.1 of the ICAPCD CEQA Air Quality Handbook. While a Lead Agency may elect to quantify construction activity emissions, the CEQA emphasis should be on mitigation, particularly for PM-10. If the project size for any proposed commercial development exceeds 10 acres, even for Tier I projects, implementation of additional feasible discretionary mitigation measures are required beyond the standard menu required for all projects regardless of size.

For any Tier II project, the ICAPCD requires at a minimum, the preparation of a Comprehensive Air Quality Analysis Report (CAQAR). The CAQAR must document the requirement to implement all feasible mitigation measures. In the quantification of construction activity emissions, the following emission levels for Tier II project should be considered as having a potentially significant temporary air quality impact:

Pollutant	Thresholds
PM-10	150 lbs/day
ROG	75 lbs/day
NOx	100 lbs/day
CO	550 lbs/day

Construction emissions that exceed these thresholds should be considered for additional mitigation beyond the mandatory and discretionary measures specified in the ICAPCD CEQA Handbook.

4.4.2.2 *Geothermal Power Plant Air Quality Impacts*

A significant geothermal power plant air quality impact would occur if the proposed project would expose employees or patrons to an excess cancer risk of 10 in one million or an acute health risk in excess of 1 in one million due to the emissions from the HGC facility.

4.4.2.3 *Global Climate Change/Greenhouse Gas Emissions*

There are currently no adopted CEQA significance thresholds for GHG emissions and possible climate change. Senate Bill 97 requires the Governors OPR to adopt CEQA guidelines concerning GHG emissions by January 2010.

In the interim, OPR has developed informal guidance to lead agencies on steps that should be taken to address climate change in CEQA documents. The recommended procedures include the following:

1. Identify/quantify GHG emissions, including emissions associated with vehicular traffic, energy consumption, and water usage and construction activities. Water usage GHG emissions have not yet been allocated by region and land use such that they cannot be accurately quantified.
2. Determine impact significance. Climate change is ultimately a cumulative impact. Various options exist in interpreting potential significance. One may consider that any project has a less-than-significant individual impact and is not cumulatively substantial on a global scale. One may alternately conclude that all new sources of GHG emissions will at least cumulatively exacerbate global warming and all project impacts should be considered as significant.
3. Mitigate impacts. Reasonable and feasible mitigation must be adopted and implemented in response to the recommended finding that the projects climate change impact is considered cumulatively significant. Given the limited ability to substantially reduce GHG emissions on a project level, adoption of a Statement of Overriding Considerations may be necessary for the residual impact after application of reasonably available mitigation measures.

In accordance with procedure No. 2 above, the threshold recommended for this project is to consider the global impact to be individually limited, but cumulatively considerable.

In addition, although global warming and the associated greenhouse gas effects are not explicitly defined under CEQA and yet to have any defined set of significance standards or thresholds; for purposes of the analysis of global climate change and greenhouse gas emissions for the proposed project, a 25-percent net reduction of CO₂ emissions with the project was sought for consistency with the intent of AB 32.

4.4.3 Impact Analysis

4.4.3.1 Construction Impacts (Short Term)

Air emissions are generated during construction activities associated with the development of a project including rough grading, underground utility construction, and paving activities. During site grading, tailpipe emissions are generated by construction related vehicles such as graders, bulldozers, water trucks, backhoes, rollers, loaders, and construction worker's vehicles. Emissions are also generated in the form of dust and PM₁₀ as a result of soil disturbance. Construction emissions vary from day-to-day depending on the number of workers, number and types of active heavy-duty vehicles and equipment, level of activity, the prevailing meteorological conditions, and the length over which these activities occur.

Construction activities will generate dust from surface disturbance and equipment exhaust from heavy off-road equipment. The indicated project components have the following estimated completion years:

- | | |
|---|------|
| • Casino, Casino Hotel and Quality Restaurant | 2012 |
| • Retail, Fast Food Restaurant and Hotel | 2012 |
| • Office and Office Tech | 2018 |

Construction emissions for each of the three above project components were calculated separately. Those with a 2012 opening year are then added together to provide total emissions when projects construction occurs simultaneously. For those activities with an opening year of 2012, the URBEMIS2007 model indicates that the maximum simultaneous project disturbance size during grading will be 13.1 acres (3.4 acres for the Casino component and 9.7 acres for the retail component).

A. Fugitive Dust Emissions (PM₁₀)

Construction activities are sources of fugitive dust emissions that have a substantial, but temporary impact on local air quality. These emissions are typically associated with land clearing, excavating, and construction. Substantial dust emissions also occur from surface disturbance and equipment exhaust from heavy off-road equipment.

ICAPCD rules in Regulation VIII require use of standard control measures for all construction projects. With mandatory use of these measures, the accepted fugitive dust (PM₁₀) emissions factor is stated to be 10.0 pounds per acre per day (Giroux & Associates, 2008). Project related construction activity PM₁₀ emissions

will be 131 pounds per day as a worst-case condition, or less than the 150 pounds per day significance threshold.

$$\text{PM}_{10} \text{ Fugitive Dust} = 13.1 \text{ acres} \times 10 \text{ pounds/acre/day} = 131 \text{ pounds/day}$$

Although the proposed project will generate PM_{10} emissions below the ICAPCD threshold, the ICAPCD requires standard mitigation measures for construction emission, which must be followed regardless of total construction emissions. These mitigation measures, as identified below under Mitigation Measure AQ1, are designed to minimize air quality emissions during construction. Table 4.4-7 also provides a summary of the construction activity emissions levels after Mitigation Measure AQ1 is implemented, which all emissions are reduced below the ICAPCD threshold. Therefore, with the implementation of Mitigation Measure AQ1, the proposed project will meet the requirements of the ICAPCD and a less than significant impact is identified for fugitive dust impacts.

With regards to impacts of fugitive dust during construction to off-site uses, EPA's "Compilation of Air Pollutant Emission Factors", (AP-42), states that the primary zone of dust soiling nuisance is within 100 feet of the activity itself. The closest sensitive receptor to any construction activities is a residential unit (Scaroni Ranch) located 0.50-mile north of the project site which is far outside the zone of dust soiling impact (Giroux & Associates, 2008). Project construction will be a one-time source that will replace a chronic source of dust generation (agricultural tilling and harvesting). Both the distance separation from any substantial numbers of sensitive receptors and with the implementation of Mitigation Measure AQ1, a less than significant impact is identified related to fugitive dust impacts to off-site uses.

B. Construction Equipment Exhaust Emissions

Construction activities associated with the proposed project will result in emissions of ROG, NO_x , CO, SO_2 , PM_{10} , $\text{PM}_{2.5}$, and CO_2 (Greenhouse gases). Exhaust emissions from typical construction equipment during site clearing and grading activities was calculated using the CARB URBEMIS 2007 computer model. As described in Table 4.4-6, emissions were calculated using the construction equipment fleet for the proposed project.

Construction activities were considered in two categories (grading; and, construction, painting, and paving) for each of the phases of the project. Estimated construction emissions for typical construction activities identified for the proposed project are provided in Table 4.4-7.

Based on the data provided in Table 4.4-7, the proposed project would generate air emissions above the allowed ICAPCD thresholds. Therefore, this issue is considered a significant impact. However, the ICAPCD requires standard mitigation measures for construction emissions, which must be followed regardless of total construction emissions. These mitigation measures, as identified below under Mitigation Measure AQ1, are designed to minimize air quality emissions during construction. Table 4.4-7 also provides a summary of the construction activity emissions levels after Mitigation Measure AQ1 is implemented. All emissions will be reduced below the ICAPCD threshold except for ROG during painting and coating, which is discussed in more detail below under architectural coatings. With implementation of Mitigation Measure AQ1, the project's construction related impacts from equipment exhaust emissions would be less than significant with the exception of ROG emissions, which is describe below under architectural coatings.

TABLE 4.4-6
Proposed Construction Equipment Fleet

Casino Phase		
Grading	Construction	Paving
Grader (1)	Generator Set (1)	Paver (1)
Tractor/Backhoe (1)	Forklift (2)	Roller (1)
Dozer (1)	Tractor/Backhoe (1)	Paving Equipment (2)
Water Truck (1)	Crane (1)	Cement Mixer (4)
	Welder (3)	Tractor/Backhoe (1)
Retail		
Grading	Construction	Paving
Grader (1)	Generator Set (1)	Paver (1)
Tractor/Backhoe (2)	Forklift (2)	Roller (1)
Dozer (1)	Tractor/Backhoe (1)	Paving Equipment (2)
Water Truck (1)	Crane (1)	Cement Mixer (4)
	Welder (3)	
Office and Office Tech		
Grading	Construction	Paving
Grader (1)	Generator Set (1)	Paver (1)
Tractor/Backhoe (2)	Forklift (2)	Roller (1)
Dozer (1)	Tractor/Backhoe (1)	Paving Equipment (2)
Water Truck (1)	Crane (1)	Cement Mixer (4)
	Welder (3)	

Source: Giroux and Associates, 2008.

TABLE 4.4-7
Construction Activity Emissions (Pounds/Day)

Casino Component Activity 2012	ROG	NO _x	CO	SO ₂	PM ₁₀ Fugitive	PM ₁₀ Exhaust.	PM ₁₀ Total	PM _{2.5} Fugitive	PM _{2.5} Exhaust	PM _{2.5} Total	CO ₂
Grading 2010											
Pre-Mitigation	3.1	25.1	13.9	0.0	33.7	1.3	34.9	7.1	1.2	8.2	2,314.5
Post-Mitigation	3.1	25.1	13.9	0.0	8.7	1.3	9.9	1.8	1.1	2.9	2,314.5
Construction, Painting, and Paving 2011											
Pre-Mitigation	49.3	36.9	51.9	0.0	0.1	2.8	2.9	0.0	2.5	2.6	4,916.6
Post-Mitigation	45.2	32.4	51.9	0.0	0.1	0.8	0.8	0.0	0.7	0.7	4,916.6
ICAPCD Threshold	75	100	550	-	-	-	150	-	-	-	-
Retail Component Activity 2012											
Grading 2010											
Pre-Mitigation	4.3	33.8	19.3	0.0	96.7	1.8	98.5	20.2	1.7	21.9	3,091.5
Post-Mitigation	4.3	33.8	19.3	0.0	24.8	1.8	26.6	5.2	1.7	6.8	3,091.5
Construction, Painting, and Paving 2011											
Pre-Mitigation	129. 0	41.2	101. 7	0.1	0.2	2.7	3.0	0.1	2.5	2.6	7,835.0
Post-Mitigation	117. 2	36.8	101. 7	0.1	0.2	0.7	1.0	0.1	0.7	0.7	7,835.0
ICAPCD Threshold	75	100	550	-	-	-	150	-	-	-	-
Total 2012 Activity											
Grading											
Pre-Mitigation	7.4	58.9	33.2	0.0	130.4	3.1	95.4	19.5	1.8	21.3	5,406.0
Post-Mitigation	7.4	58.9	33.2	0.0	33.5	3.1	36.5	7	2.8	9.7	5,406.0
Construction, Painting, and Paving											
Pre-Mitigation	178.3	78.1	153.6	0.1	0.3	5.5	5.9	0.1	5	5.2	12,751.6
Post-Mitigation	162.4	69.2	153.6	0.1	0.3	1.5	1.8	0.1	1.4	1.4	12,751.6
ICAPCD Threshold	75	100	550	-	-	-	150	-	-	-	-

TABLE 4.4-7
Construction Activity Emissions (Pounds/Day)
(cont'd.)

Office/Technology 2018	ROG	NO _x	CO	SO ₂	PM ₁₀ Fugitive	PM ₁₀ Exhaust.	PM ₁₀ Total	PM _{2.5} Fugitive	PM _{2.5} Exhaust	PM _{2.5} Total	CO ₂
Grading											
Pre-Mitigation	3.0	21.9	15.5	0.0	84.4	1.1	85.5	17.6	1.0	18.6	3,091.8
Post-Mitigation	3.0	18.6	15.5	0.0	7.8	0.2	8.0	1.6	0.2	1.8	3,091.7
Construction, Painting, and Paving											
Pre-Mitigation	110.7	26.1	64.7	0.0	0.2	1.6	1.8	0.1	1.5	1.5	7,229.9
Post-Mitigation	100.3	23.0	64.7	0.0	0.2	0.4	0.6	0.1	0.4	0.4	7,229.9
ICAPCD Threshold	75	100	550	-	-	-	150	-	-	-	-

Source: Giroux and Associates, 2008.

C. Diesel Related Toxic Emissions

Construction equipment exhaust contains carcinogenic compounds that may create an elevated cancer risk to off-site populations. Quantification of this risk assumes continuous emissions for 70 years, 365 days per year, 24 hours per day, and that the receiver remains outside his/her residence for 600,000+ hours. Grading activity will constitute a minute fraction of this worst-case exposure duration, and daytime meteorology in Imperial County is highly favorable to excellent pollution dispersion. Prevailing wind directions are similarly not toward the closest residences to the site, which is 0.50-mile north of the project site. Therefore, diesel exhaust exposure risk is considered small.

In addition, based on a memo received from Hans Giroux, Calexico Diesel Exhaust Health Risk Screening, dated September 19, 2008 (Giroux, 2008), a SCREEN3 computer model to calculate the excess cancer risk of the proposed project to the closest existing residence (located 0.50 miles northwest of the site), assuming the occupants at this residence are on their porch for 24 hours per day, 365 days per year, for 2000 days of heavy equipment operations at the project site. This is considered an "over predictive" assumption since it far exceeds the expected individual exposure and heavy equipment operations for construction of all phases. An individual cancer risk of less than 10 in a million is considered less than significant. The predicted lifetime exposure and the associated excess cancer risk as determined from the SCREEN3 screening dispersion model at the nearest residence is $0.0002056 \text{ microgram/m}^3 = 0.61$ in a million risk. Therefore, even using an "over predictive" assumption, a less than significant impact related to diesel exhaust exposure from the proposed project is identified.

Furthermore, with the implementation of Mitigation Measure AQ1, the proposed project will make efforts to reduce construction related emissions, which would help reduce diesel exhaust emissions. Therefore, no significant impact related to diesel exhaust emissions is anticipated with the construction of the proposed project.

D. Global Climate Change/Greenhouse Gas Emissions

An impact analysis for GHG emissions of the proposed project for both construction and operational activities is provided below under the Operational Impacts discussion.

E. Architectural Coatings

Architectural coatings (i.e., paint) have the potential to emit reactive organic gases (ROG) during the application of paints and coatings. Based on the data provided in Table 4.4-7, the proposed project would result in a total generation of 178.3 pounds per day (pre-mitigation) of ROG emissions during the Construction, Painting and Paving for the Casino plus retail/restaurant development of the project and 110.7 pounds per day of ROG emissions for the Office and Office Tech development of the project construction, which exceeds the 75 pounds per day ICAPCD significance threshold for ROG emissions; and therefore, is considered a significant impact. In order to mitigate this impact, ICAPCD Rule 424 requires the use of low-Volatile Organic Compounds (VOC) paints for projects in the jurisdiction of the ICAPCD, which help reduce ROG emissions. As such, Mitigation Measure AQ2 will be implemented, which requires the use of pre-coated building materials and using high-pressure-low volume paint applicators, to reduce the proposed project's ROG emissions to the maximum extent feasible. However, as depicted in Table 4.4-7,

ROG emissions exceed the ICAPCD thresholds by more than two hundred percent during construction and painting, even with the application of paintings and coatings using low-VOC paint. Mitigation of this impact might be accomplished by using pre-coated building materials and using high pressure-low (HPLV) paint applicators (Mitigation Measure AQ2), but not to a level of insignificance. Therefore, a significant and unmitigable impact related to architectural coatings is identified for the proposed project. This significant and unmitigable impact would be localized to the proposed project and would be temporary during painting ~~location~~ of the proposed buildings.

4.4.3.2 *Operational Impacts (Long Term)*

The proposed project will generate mobile emissions and stationary emissions. Motor vehicles (mobile emissions) are the primary source of emissions associated with the proposed project. Stationary sources include two types: point and area. Point sources are those specific sites, which have one or more emission sources at a facility with an identified location (e.g., industrial operations, power plant). Area sources comprise many small emission sources (e.g., offices and retail shops) which do not have specifically identified locations, but for which emissions can be calculated using per unit standards. The proposed project will generate a small amount of stationary emissions as the land use type proposed will emit only small amounts of pollutant emissions. No industrial uses that typically emit large amounts of air pollutant emissions are proposed as part of the project. Vehicular trips (mobile emissions) to and from the proposed land uses will be the primary source of air pollutant emissions, specifically carbon monoxide (CO).

A. Vehicular Emission Levels

As discussed in Section 4.3 – Transportation/Circulation of this EIR, the proposed project is expected to generate approximately 59,285 net new vehicular trips per day upon completion of the entire project. The calculated maximum daily emissions from proposed project's traffic, plus minor "area source" emissions such as personal care or cleaning products, paints, and solvents, natural gas combustion, etc., are provided in Table 4.4-8. Please note these emissions levels count all 59,285 vehicular trips as new trips to the area, which is identified as worst-case scenario. It does not take into account all the existing trips that are already occurring in the area that have been accounted for in other EIRs for residential developments.

Based on the data provided in Table 4.4-8, maximum daily emissions from project traffic, plus minor area source emissions exceed the adopted ICAPCD operational significance thresholds for ROG, NO_x, CO, and PM₁₀ for three phases of development (Casino and Hotel, Restaurant and Retail phase, and Office and Office Tech Phase which includes the total project). Based on Table 4.4-8, the proposed project will contribute to the regional inability to obtain the ozone standard based upon ICAPCD's recommended significance thresholds. As such, the implementation of the proposed project would create a potentially significant regional air quality impact. Project-related emission levels for the two ozone precursor pollutants (ROG and NO_x) as well as CO could exceed the threshold by as much as over one thousand percent. No reasonable level of mitigation could reduce such "excessive" levels to a less than significant level.

However, as seen in Table 4.4-8, any delay in project build-out will reduce the project air quality impacts since future year traffic is anticipated to be "cleaner" with each new model year. For an assumed total project build-out in 2018, total air pollution emissions for ROG, NO_x, and CO will be less than for the portion

of the project that will be completed in 2012. Emissions of PM₁₀ and CO₂, which depends more on mileage and less on the model year, will increase by 2018 with the added total project traffic.

In order to mitigate vehicular emission impacts produced by the operation of new commercial or residential developments, the ICAPCD has developed standard and discretionary measures as discussed in Mitigation Measure AQ3, which will reduce air quality impacts. In addition, Imperial County Board of Supervisors approved Rule 310 to the District's Rules and Regulations, discussed below under Mitigation

TABLE 4.4-8
Project-Related Operations Air Pollutant Emissions

Project Phase	Aggregate Emissions in Pounds/Day						
	ROG	NO _x	CO	SO _x	PM ₁₀	PM _{2.5}	CO ₂
Casino and Hotel (2012)							
"Area Sources"	2.3	3.3	7.3	0.0	0.0	0.0	3,839.5
On-Road Vehicles	157.1	326.1	2,164.7	1.5	265.0	53.5	157,694.3
Total	159.4	329.4	2,172.0	1.5	265.1	53.5	161,533.8
Significance Threshold (ICAPCD)	55	55	550	150	150	N/A	N/A
Restaurant and Retail (2012)							
"Area Sources"	3.8	5.7	9.4	0.0	0.0	0.0	6,812.0
On-Road Vehicles	305.8	637.3	4,237.8	2.9	517.6	104.4	308,098.9
Total	309.6	643.0	4,237.8	2.9	517.6	104.4	314,910.9
Significance Threshold (ICAPCD)	55	55	550	150	150	N/A	N/A
Total Project with Office Uses (2018)							
"Area Sources"	11.1	13.9	23.9	0.0	0.1	0.1	16,537.1
On-Road Vehicles	407.0	751.7	5,410.0	5.9	1,048.6	203.8	637,959.6
Total	418.1	765.6	5,433.9	5.9	1,048.6	203.9	654,496.7
Significance Threshold (ICAPCD)	55	55	550	150	150	N/A	N/A
Percent of Threshold	760	1,392	988	4	699	N/A	N/A

Note: ROG – reactive organic gases; NO_x – nitrogen oxide; CO – carbon monoxide; SO_x – sulfur oxide; PM₁₀ – respirable particulates; PM_{2.5} – ultra-fine particulates; and, CO₂ – carbon dioxide.

Source: Giroux and Associates, 2008.

Measure AQ4. Rule 310 establishes a program to mitigate indirect source emissions through the creation of off-site mitigation, through payment of an operational development fee or through some combination of both. Off-site mitigation can be accomplished by the developer sponsored programs to retire polluting equipment from service. Such programs may include electrification of diesel-powered equipment such as pumps and compressors. It could also include subsidizing the acquisitions of new buses or conversion of existing diesel-powered vehicles for school districts or transit operators.

Any inability to achieve a net zero position through emissions controls on existing sources, may be off-set by payment of a one-time "in-lieu" fee to allow the ICAPCD to fund other pollution control programs. The fee in 2008 for commercial uses is \$1.60 per square foot. For phased developments, the fee is due at the time

of obtaining a building permit for each particular phase. Payment of these fees and implementation of Mitigation Measure AQ3, is considered sufficient to reduce air quality impacts to a level less than significant.

The ICAPCD will use these funds to pay for the construction of off-site improvements and other measures throughout the Imperial county that will reduce existing air emissions. The ICAPCD is responsible for identifying and selecting the off-site improvements, which are funded with the in-lieu fees. These improvements may include, but are not limited to the following:

- Retrofit existing homes in the project area with energy-efficient devices.
- Retrofit existing businesses in the project area with energy-efficient devices.
- Fund a program to buy and scrap older, higher emission passenger and heavy-duty vehicles.
- Replace/repower transit buses.
- Replace/repower heavy-duty diesel school vehicles (i.e., bus, passenger or maintenance vehicles).
- Fund an electric lawn and garden equipment exchange program.
- Retrofit or repower heavy-duty construction equipment, or on-road vehicles.
- Repower or contribute to funding clean diesel locomotive main or auxiliary engines.
- Install bicycle racks on transit buses.
- Purchase particulate filters or oxidation catalysts for local school buses, transit buses or construction fleets.
- Install or contribute to funding alternative fueling infrastructure (i.e. fueling stations for CNG, LPG, conduction and inductive electric vehicle charging, etc.).
- Fund expansion of existing transit services.
- Fund public transit bus shelters.
- Subsidize vanpool programs.
- Subsidize transportation alternative incentive programs.
- Contribute to funding of new bike lanes.
- Install bicycle storage facilities.
- Provide assistance in the implementation of projects that are identified in a city or county Bicycle Master Plan.

The proposed project will result in a significant impact related to operational vehicular emissions. Implementation of Mitigation Measures AQ3 and AQ4, which include the required mitigation measures per the ICAPCD CEQA Air Quality Handbook and payment of the in-lieu fees per Air District Rule 310, would reduce the significant air quality impact to a level less than significant.

4.4.3.3 *Microscale Impact Analysis (CO "Hotspots")*

Development of the proposed project has the potential to generate traffic on area roadways and increase the exposure of sensitive receptors to carbon monoxide (CO) levels in excess of state and federal standards. The potential for CO "hot spots" or places where CO concentrations exceed applicable standards to impact sensitive receptors, such as residences and schools, is a primary concern. These

hotspots typically occur in areas where vehicles idle (i.e., intersections). Hotspots occur mostly in the early morning hours when wind are stagnant, temperatures are relatively low, and ambient CO concentrations are elevated. Vehicles idling at these intersections could create CO hot spots which can affect sensitive receptors in the vicinity of the intersections.

Microscale air quality impacts have traditionally been analyzed in environmental documents where the air basin was a non-attainment for carbon monoxide (CO). However, the South Coast Air Quality Management District (SCAQMD) has demonstrated in the CO attainment redesignation request to the EPA that there are no “hot spots” anywhere in Southern California, even at intersections with much higher volumes, much worse congestion, and much higher background CO levels than anywhere in the project area.

A CO screening analysis was performed at the closest most impacted intersections surrounding the project. One-hour CO concentrations were calculated on the sidewalks to these intersections. The A.M. and P.M. peak one-hour levels are shown in Tables 4.4-9 and 4.4-10, respectively.

Existing peak one-hour local CO background levels in 2007 in the project vicinity were 10.4 parts per million (ppm). Combined worst-case background (10.4 ppm) plus local (2.7 ppm) equate to one-hour CO levels of 13.1 ppm which are below the most stringent one-hour standard of 20 ppm. Therefore, the proposed project would not contribute toward a CO “hotspot” impact and this issue is considered less than significant.

4.4.3.4 *Odor/Air Toxins*

A. Geothermal Power Plant Air Quality Impacts

The ICAPCD has conducted a risk prioritization of all County facilities. The resulting screening level health risk for the HGC plant was an excess risk of 74 in a million. Any facility with a screening score of more than 10 in a million is a high-risk facility (Giroux and Associates, 2008). However, in 1994 a refined health risk assessment (HRA) reported an excess cancer risk of only 0.15 in a million for the maximum individual cancer risk (Table 4.4-11).

A cancer risk of more than 10 in a million, or an acute risk index exceeding 1.0 would be considered a significant deterrent to residential uses. In 1994, the risk levels at the nearest home (Scaroni Ranch), 600 yards from the HGC plant boundary, was less than significant. Today, benzene emission levels have been slightly reduced, and are anticipated to be substantially reduced over the next 70 years. The closest point of the project is also more than twice as far as the Scaroni Ranch house.

As discussed above, regulatory agencies examining the geothermal power plant facility found no detectable levels of arsenic compounds, beryllium, bromide compounds, cadmium compounds, hexavalent chromium, copper, lead compounds, mercury, nickel, radon, or selenium compounds in the return circulating water. The HGC facility emits small amounts of gaseous pollutants (hydrogen sulfide (H₂S), ammonia (NH₃), and benzene (C₆H₆), which may be unhealthful and/or cause a nuisance.

Table 4.4-9
A.M. Peak One-Hour CO Concentrations (ppm)

Intersection	Existing ¹ & Casino	Existing ¹ & All	2015	2015 & Casino	2015 & All
I-8 WB/Dogwood	0.5	0.5	0.6	0.4	0.4
I-8 EB/Dogwood	0.5	0.6	0.6	0.5	0.6
I-8 WB/Bowker	0.1	0.1	0.3	0.3	0.3
I-8 EB/Bowker	0.1	0.1	0.4	0.4	0.4
Dogwood/Dannenberg	0.5	0.5	0.4	0.5	0.6
Dogwood/McCabe-N	0.3	0.3	N/A	N/A	N/A
Dogwood/McCabe-S	0.3	0.4	0.4	0.4	0.7
McCabe/Bowker	0.1	0.1	0.4	0.4	0.4
Dogwood/Abatti	0.3	0.4	0.3	0.4	0.5
Dogwood/Heber	0.5	0.3	0.5	0.5	0.7
SR-111/Heber	1.4	1.4	0.2	0.2	0.2
Heber/Yourman	0.1	0.1	0.1	0.1	0.1
Heber/Bowker	N/A	N/A	N/A	N/A	N/A
Heber/Bowker	0.1	0.1	0.4	0.4	0.5
Dogwood/Willoughby	N/A	N/A	N/A	N/A	N/A
Dogwood/Willoughby	0.4	0.6	0.4	0.5	0.8
Jasper/Pitzer	0.1	0.1	0.2	0.2	0.4
Jasper/Scaroni	0.1	0.4	0.2	0.3	0.9
Jasper/SR-111	1.3	1.4	0.7	0.9	1.1
Jasper/Yourman	0.2	0.2	N/A	N/A	N/A
Jasper/W Site Entrance	0.1	N/A	N/A	N/A	N/A
Jasper/C Site Entrance	0.1	N/A	N/A	N/A	N/A
Jasper/Rockwood	N/A	N/A	0.7	0.7	0.8
Jasper/Meadows	<0.1	0.1	0.5	0.5	0.7
Jasper/Bowker	0.1	0.1	0.5	0.5	0.5
Dogwood/Cole	0.2	0.2	0.3	0.3	0.4
Cole/Scaroni	0.9	1.0	0.6	0.5	0.8
SR-111/Cole	1.4	1.4	0.6	0.6	0.9
Cole/Yourman	0.9	1.0	0.7	0.7	0.9
Cole/Meadows	0.6	0.6	0.5	0.5	0.6
Cole/Bowker	0.2	0.3	0.3	0.4	0.4
SR-98/Cole	0.5	0.5	0.3	0.3	0.4
SR-98/Dogwood	0.4	0.4	0.3	0.3	0.3
SR-98/SR-111	1.6	1.6	1.2	1.2	1.4
SR-98/Rockwood	0.8	0.8	0.5	0.4	0.5
SR-98/Meadows	1.1	1.1	0.8	0.9	0.9
SR-98/Bowker	0.2	0.2	0.2	0.2	0.2

Note: 1=Existing Conditions are the Year 2006 conditions.

Source: Giroux and Associates, 2008.

Table 4.4-10
P.M. Peak One-Hour CO Concentrations (ppm)

Intersection	Existing ¹ & Casino	Existing ¹ & All	2015	2015 & Casino	2015 & All
I-8 WB/Dogwood	0.6	1.0	0.9	0.6	0.7
I-8 EB/Dogwood	0.8	0.9	1.0	0.8	0.9
I-8 WB/Bowker	0.1	0.1	0.3	0.6	0.3
I-8 EB/Bowker	0.1	0.1	0.4	0.4	0.5
Dogwood/Dannenberg	0.9	1.1	0.8	0.8	1.0
Dogwood/McCabe-N	0.4	0.6	N/A	N/A	N/A
Dogwood/McCabe-S	0.5	0.8	0.5	0.6	0.9
McCabe/Bowker	0.1	0.2	0.4	0.4	0.5
Dogwood/Abatti	0.5	0.8	0.5	0.6	0.9
Dogwood/Heber	0.5	0.9	0.6	0.6	1.1
SR-111/Heber	1.8	2.1	0.5	0.5	0.5
Heber/Yourman	0.2	0.2	0.2	0.2	0.2
Heber/Bowker	N/A	N/A	N/A	N/A	N/A
Heber/Bowker	0.1	0.2	0.4	0.4	0.5
Dogwood/Willougby	N/A	N/A	N/A	N/A	N/A
Dogwood/Willougby	0.5	1.1	0.6	0.7	1.2
Jasper/Pitzer	0.1	0.5	0.3	0.3	0.7
Jasper/Scaroni	0.3	1.3	0.3	0.4	1.6
Jasper/SR-111	2.0	2.7	1.3	1.4	1.9
Jasper/Yourman	0.2	0.4	N/A	N/A	N/A
Jasper/W Site Entrance	0.1	N/A	N/A	N/A	N/A
Jasper/C Site Entrance	0.2	N/A	N/A	N/A	N/A
Jasper/Rockwood	N/A	N/A	1.3	1.4	1.7
Jasper/Meadows	0.1	0.2	0.9	0.9	1.1
Jasper/Bowker	0.1	0.3	0.4	0.6	0.8
Dogwood/Cole	0.4	0.5	0.4	0.4	0.6
Cole/Scaroni	1.0	1.3	0.7	0.8	1.2
SR-111/Cole	2.2	2.6	0.6	0.7	1.0
Cole/Yourman	1.3	1.5	1.1	1.1	1.4
Cole/Meadows	0.8	1.1	0.7	0.7	1.0
Cole/Bowker	0.3	0.4	0.4	0.4	0.5
SR-98/Cole	0.6	0.8	0.4	0.4	0.6
SR-98/Dogwood	0.4	0.5	0.3	0.3	0.5
SR-98/SR-111	2.0	2.3	1.8	1.8	2.3
SR-98/Rockwood	1.0	1.0	0.7	0.8	0.7
SR-98/Meadows	0.7	0.9	0.6	0.7	0.9
SR-98/Bowker	0.3	0.3	0.2	0.2	0.2

Note: 1 = Existing Conditions are the Year 2006 conditions.

Source: Giroux and Associates, 2008.

TABLE 4.4-11
Heber Geothermal Company Power Plant
Health Risk Assessment Results (1994)

Cancer Risk	HGC Plant Boundary	55 in a million
	Nearest Home	1.1 in a million
Acute Risk Index	HGC Plant Boundary	4.4
	Nearest Home	0.35

Source: Giroux and Associates, 2008.

However, such emissions are regulated and monitored at both the Federal and State level, including the ICAPCD. Such emissions are within the operator's permitted authority to emit. Based on the 1994 risk assessment that was prepared a person would be impacted the emissions emitted by the HGC plant if the individual would be exposed to the plant emissions for 24 hour per day, 7 days a week, for a lifetime of 70-years. The proposed project is the development of a casino, hotels, and commercial highway uses (e.g., retail, restaurants, office, and office tech) that would logically not have a 70-year, 365 day/year, 24-hour/day outdoor individual exposure assumed in the risk assessment. The largest amount of exposure would 40 hours a week from employees of the casino, hotels, and commercial highway development. However, this exposure is less than the threshold for impact as determined by the risk assessment. Therefore, a less than significant impact is identified for this issue area.

B. Global Climate Change/Greenhouse Gas Emissions

Maximum project-related GHG emissions would occur at project-build out (2018). During intervening years, project operations and construction activities will overlap, but the worst-case consideration will be at full build-out. GHG emissions were therefore quantified for 2018.

Project-related GHG emissions from transportation sources dominate the project GHG burden. The URBEMIS2007 computer model explicitly calculates CO₂ emissions for each proposed project land use. A small amount of non- CO₂ GHG's will also be generated in vehicular exhaust. The California Climatic Action Registry recommends an adjustment of 3.7 percent to convert CO₂ emissions to CO₂-equivalent emissions for a typical California vehicle fleet. The URBEMIS2007 output for a 2018 build-out shows the following daily CO₂ from project related travel of slightly over 600,000 miles per day:

Non-office (7days/week)	-	472,027.9 lb/day
Office (5 days/week)	-	165,931.7 lb/day

Annually, the two types of uses will create the following CO₂ emissions:

Non-office	-	86,145 tons/year
Office	-	21,571 tons/year
Total	-	107,716 tons/year
CO ₂ Equivalent	-	111,724 tons/year

Energy consumption will be an important secondary source of GHG emissions. Energy consumption was estimated using SCAQMD CEQA Handbook factors for the various land uses of the proposed project and are provided below in Table 4.4-12.

TABLE 4.4-12
Energy Consumption for the Proposed Project

Use	Size (sq. ft)	Electricity		Heating	
		Factor (a)	Usage (b)	Factor (c)	Usage (d)
Quality Restaurant	100,000	47.45	4745	2.9	3.48
Fast Food Restaurant	10,000	47.45	474	2.9	0.35
Casino Hotel (600 sq. ft/room)	120,000	9.95	1194	4.8	6.91
Hotel (400 sq. ft/room)	80,000	9.95	796	4.9	4.61
Regional Shopping Center	411,000	13.55	5569	2.9	14.30
Office Park	395,000	12.95	5115	2.0	9.48
Casino	93,880	47.45	4455	2.9	3.27
Office Tech	340,000	12.95	4403	2.0	8.16
TOTAL	-	-	26,751	-	50.56

Notes: (a) KWH/unit/year; (b) MWH/year; (c) cubic foot/unit/month; (d) million cubic foot/year

Source: Giroux & Associates, 2008.

The CCAR Protocols recommend a CO₂ emission rate and a CO₂-equivalent conversion as follows:

Electricity (California)	878.71 lb/MWH (1.0012 adj.)
Natural Gas	119,600 lb/MM cubic foot (1.0035 adj.)

Application of the CCAR rates and adjustments leads to the following annual CO₂-equivalent emissions for the proposed project:

Transportation -	111,724 tons
Electricity -	11,769 tons
Heating -	3,034 tons
Total -	126,527 tons

In Year 2004 (the last published state inventory), California generated 541,000,000 tons of CO₂-equivalent GHG per year. If the Year 2004 rate continued unchanged until Year 2018, the total project would generate 0.023 percent of the statewide total. Accordingly, the project would not result in a significant impact on global climate change. However, the project's GHG emissions would contribute to cumulative impacts on global climate change, which are discussed in Section 5.0 – Cumulative Impacts of this EIR. However, the project is required to be ~~consisted~~ consistent with the requirements of AB 32, and would be required to demonstrate that it has policies in place that would provide a goal of 25-percent reduction in CO₂ by 2020. As such in accordance with AB 32, the proposed project shall implementation project-

specific mitigation measures identified in Mitigation Measure AQ5, which are similar to those measures designed to reduced criteria air pollutants in Mitigation Measures AQ1 and AQ3. The transportation sector was shown to be the largest emitter of GHG emissions, emitting roughly 88 percent of project-related GHG emissions in the Year 2018. As such, Mitigation Measure AQ5 includes measures that reduce trip generation or trip lengths, optimize transportation efficiency, and promote energy conservation. With the implementation of Mitigation Measure AQ5, the cumulative impact related to GHG emissions will be reduced to the maximum extent feasible; however, a significant and unmitigable impact will remain with the implementation of the proposed project. It is important to note that the project would provide gaming and commercial highway use opportunities to local populations likely reducing the overall vehicle miles traveled to meet such demand at other, more distant, casinos/commercial highway uses. As such, this analysis likely overstates the project's contribution to the emission of GHG and associated consequences.

C. Adjacent Agriculture Uses

The property located north of the project site is located within the County of Imperial and is currently being used for agriculture. Certain inconveniences or nuisances can be experienced at the project site from near active agricultural operations. Such nuisances can include exposure to noise, dust, light, fumes, chemical usage, insects, and odors. These inconveniences or nuisances are generally issues of concern for residential uses that have individuals residing in an area for long periods of time. Unlike the previous Specific Plan (Calexico International Center), the proposed project does not include residential uses. Therefore, the potential impact of such nuisances is considered less than significant. However, if complaints are made from the project site, Imperial County has a Right-to-Farm Ordinance (Ordinance 1031 (1990)) that serves to protect pre-existing agricultural uses from such pressures.

4.4.3.5 Sensitive Receptors

As discussed above, the property to the north of the project site is currently being used for agricultural operations and certain nuisances (e.g., exposure to noise, dust, light, fumes, chemical usage, insects, and odors) can be experienced at the project site from this agriculture field. These inconveniences or nuisances are generally issues of concern for residential uses that have individuals residing in an area for long periods of time. Currently, no sensitive receptors are located within or adjacent to the project site. The closest residential unit to the project site the Scaroni Ranch property located approximately 0.50 mile northwest of the project site. In addition, no sensitive receptors are being proposed on the project site. Therefore, the potential impact of such nuisances is considered less than significant. However, if complaints are made from the project site, Imperial County has a Right-to-Farm Ordinance (Ordinance 1031 (1990)) that serves to protect pre-existing agricultural uses from such pressures.

4.4.4 Significance of Impact

The proposed project will result in a short-term construction impact related air quality impact, due to generation of fugitive dust, construction exhaust emissions, and ROG's above the ICAPCD's significance thresholds. The proposed project will also result in a long-term air quality impact as a result of vehicular generated emissions. Mitigation is proposed below to mitigate the air quality impacts to a level of less than significant. However, a significant and unmitigable impact will remain related to the ROG emissions during construction activities.

A less than significant impact is identified for odor/air toxins in relation to geothermal power plant air quality impacts and no mitigation is required.

Furthermore, with regards to GHG emissions, the proposed project will result in a significant and unmitigable cumulative impact related to GHG emissions.

The proposed project will not conflict with or obstruct implementation of the applicable air quality plan and would not expose sensitive receptors to substantial pollutant concentrations. Therefore, no significant impact is identified for these issue areas.

4.4.5 Mitigation Measures

4.4.5.1 Construction Impacts

AQ1 Dust Control

Standard Mitigation Measures

All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.

All on site and off site paved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.

All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emission shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.

The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul Trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.

All Track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.

Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at points of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line.

The construction of any new Unpaved Road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized and visible emissions shall be limited to no greater than 20% opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.

Discretionary Mitigation Measures

- Water exposed surfaces and unpaved haul routes at least three times daily.
- Cover all stockpiles with tarps when left unattended for more than 72 hours.
- Reduce speed on unpaved roads and haul routes to less than 15 mph.
- Develop a trip reduction plan to achieve a 1.5 AVR for construction employees.
- Implement a shuttle service to and from retail services and food establishments during lunch hours.

Construction Equipment Emissions Mitigation (these measures are mutually exclusive)

- Use of alternative fueled or catalyst equipped diesel construction equipment including all off-road portable diesel powered equipment.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
- Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.
- Replace fossil fueled equipment with electrically driven equipment where feasible (provided they are not run via a portable generator set).
- Require 90-day low-NOx tune-ups for off-road equipment.
- Require use of Tier 3-rated engines for scrapers and dozers used in grading if locally available.
- Require installation of soot filters on all diesel equipment >100 HP.
- Curtail construction activities during periods of high ambient pollution levels upon the advice of the ICAPCD.

Off-Site Impacts

- Encourage car pooling for construction workers.
- Limit lane closures to off-peak travel periods.
- Park construction vehicles off traveled roadways.
- Implement a shuttle service during lunch hours, or allow food service trucks on construction sites.
- Encourage receipt of construction materials during non-peak traffic hours.
- Sandbag construction sites for erosion control.

AQ2 Painting and Coating

Pre-coated building materials and using high pressure-low volume (HPLV) paint applicators shall be used for painting and coating of all buildings within the project site.

4.4.5.2 Operational Impacts

Pursuant to the ICAPCD's CEQA Handbook, the following mitigation measures have been identified to reduce the operational air quality impact associated with the proposed project. The project applicant shall implement these measures prior to the commencement of operations of the project and shall ensure that these measures remain in effect at all times during project operations:

AQ3 Standard Site Design Measures

- Provide on-site bicycle lockers and/or racks.
- Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.
- Provide shower and locker facilities to encourage employees to bike and/or walk to work.
- Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B.

Discretionary Mitigation Measures (where feasible)

- Increase street tree planting.
- Plant shade trees in parking lots to reduce evaporative emissions from parked vehicles.
- Increase number of bicycles routes/lanes.
- If the project is located on an established transit route, improve public transit accessibility by providing transit turnouts with direct pedestrian access to protect or improve transit stop amenities.
- For bus service within a mile of the project provide bus stop improvements such as shelters, route information, benches and lighting.
- Implement on-site circulation design elements in parking lots to reduce vehicle queuing and improve the pedestrian environment.
- Provide pedestrian signalization and signage to improve pedestrian safety.
- Synchronize traffic lights on streets impacted by development.

Discretionary Energy Efficiency Measures (where feasible)

- Use roof material with a solar reflectance value meeting the EPA/DOE Energy Star rating to reduce summer cooling needs.
- Use built-in energy efficient appliances, where applicable.
- Use double-paned windows.
- Use low energy parking lot and street lights (i.e. sodium).

- Use energy efficient interior lighting.
- Use low energy traffic signals.
- Install door sweeps and weather stripping if more efficient doors and windows are not available.
- Install high efficiency gas/electric space heating.

AQ4 Prior to the issuance of a building permit, the project applicant shall comply with ICAPCD Rule 310 by paying an in lieu fee, in an amount determined by the applicable rates under Rule 310(D) in effect at the time of final payment and estimated to be approximately one million dollars (exact amount to be determined by the ICAPCD), to the ICAPCD to offset NO_x and CO emissions. The in lieu fee shall provide for off-site improvements to improve the overall air quality in the Imperial Valley. Pursuant to Rule 310(E), the ICAPCD is responsible for identifying and selecting the off-site improvements to be funded by the in lieu fee. Such off-site improvements may include, but are not limited to, the following:

- Retrofit existing homes in the project area with energy-efficient devices.
- Retrofit existing businesses in the project area with energy-efficient devices.
- Fund a program to buy and scrap older, higher emission passenger and heavy-duty vehicles.
- Replace/repower transit buses.
- Replace/repower heavy-duty diesel school vehicles (i.e., bus, passenger or maintenance vehicles).
- Fund an electric lawn and garden equipment exchange program.
- Retrofit or repower heavy-duty construction equipment, or on-road vehicles.
- Repower or contribute to funding clean diesel locomotive main or auxiliary engines.
- Install bicycle racks on transit buses.
- Purchase particulate filters or oxidation catalysts for local school buses, transit buses or construction fleets.
- Install or contribute to funding alternative fueling infrastructure (i.e. fueling stations for CNG, LPG, conduction and inductive electric vehicle charging, etc.).
- Fund expansion of existing transit services.
- Fund public transit bus shelters.
- Subsidize vanpool programs.
- Subsidize transportation alternative incentive programs.
- Contribute to funding of new bike lanes.
- Install bicycle storage facilities.

- Provide assistance in the implementation of projects that are identified in a city or county Bicycle Master Plan.

4.4.5.3 Odor/Air Toxins

Emissions from the existing HGC facility are permitted, and monitored by the ICAPCD. The 1994 Health Risk Assessment shows that the excess cancer risk and acute health risk are below the applicable thresholds at the project site. No mitigation is required.

4.4.5.4 Global Climate Change/Greenhouse Gas Emissions

AQ5 The following mitigation recommendations shall be implemented to the extent feasible to reduce the cumulative GHG emission impact of the proposed project:

Land Use and Transportation

- Integrate project development and retail amenities (services and shopping opportunities) to minimize out-of-project travel in order to help reduce vehicle miles traveled resulting from discretionary automobile trips.
- Apply advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people goods and services.
- Incorporate features into project design that would accommodate the supply of frequent, reliable and convenient public transit.
- Implement street improvements that are designed to relieve pressure on the most congested roadways and intersections.
- Limit idling time for commercial vehicles, including delivery and construction vehicles.

Energy Conservation

- Recognize and promote energy savings measures beyond Title 24 requirements for commercial projects.
- Where feasible, include in new buildings facilities to support the use of low/zero carbon fueled vehicles, such as the charging of electric vehicles from green electricity sources.
- Replace traffic lights, street lights, and other electrical uses to energy efficient bulbs and appliances.
- Construct non-residential buildings to meet LEED (Leadership in Energy and Environmental Design) Silver Certification where possible.
- Maximize use of low pressure sodium and/or fluorescent lighting.
- Require acquisition of new appliances and equipment to meet Energy Star certification.

Urban Forestry

- Plant trees or vegetation to shade buildings and thus reduce heating/cooling demand.
- Select landscaping that is fast-growing while minimizing water demand to sequester carbon while reducing electrical loads associated with regional water transportation.

Programs to Reduce Solid Waste

- Create incentives to increase recycling and reduce generation of solid waste by commercial and office users.
- Participate in green waste collection and recycling programs for landscape maintenance.

4.4.6 Conclusion

Implementation of Mitigation Measures AQ1 and AQ2 and compliance with ICAPCD Regulation VIII, would reduce the short-term construction related air quality impact to a level less than significant, except for ROG emissions, which is considered to be significant and unmitigable. Table 4.4-7 identifies the air quality emission level during construction after mitigation is implemented.

Implementation of Mitigation Measure AQ3 and AQ4 would reduce the project's long-term operational air quality impact, as a result of vehicular generated emissions, to a level less than significant and would ensure the project achieve the no net emissions requirement of the ICAPCD.

Implementation of Mitigation Measure AQ5 would reduce the cumulatively significant GHG emission impact to the maximum extent feasible; however, this impact would remain significant and unmitigable.